IN THE CLAIMS:

Claims 1-45 canceled.

46. (Currently Amended) A method of producing a biosensor comprising:

dispensing a liquid optical cement between a master grating structure and a substrate, wherein the master grating structure comprises features having a depth and a period;

causing the liquid optical cement to harden forming a hardened liquid, wherein the hardened liquid adheres to the substrate;

separating the substrate and the hardened liquid from the master grating structure, the hardened liquid replicating the master grating structure, the hardened liquid thus forming an optical grating that replicates the features of the master grating structure, ~~the optical grating defining features having a depth and a period~~; ~~and~~

depositing a coating onto the hardened liquid, a coating having a higher refractive index than the hardened liquid to form an optical grating; and

immobilizing one or more specific binding substances on the optical grating to form a biosensor;

wherein, when the biosensor is illuminated, a resonant grating effect is produced on the reflected radiation spectrum, and wherein the depth and period of the optical grating are less than the wavelength of the resonant grating effect.

47. (Canceled)

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48. (Original) The method of claim 46, further comprising:

creating the master grating structure by selectively etching a silicon wafer to create optical features having a depth and a period.

49. (Canceled)

50. (Currently Amended) The method of claim 46 [[49]], wherein hardening the optical cement comprises exposure to UV light.

51. (Currently Amended) A method of producing a biosensor comprising:

creating a master grating structure by selectively etching a silicon wafer to create optical features having a depth and a period;

dispensing liquid optical cement between the master grating structure and a substrate;

curing the liquid optical cement by exposing it to UV light to form cured optical cement, wherein the cured optical cement adheres to the substrate;

separating the substrate and the cured optical cement from the master grating structure, the cured optical cement replicating the master grating structure, ~~the cured optical cement thus forming an optical grating that replicates the features of the master grating structure, the optical grating defining features having a depth and a period~~;

coating the ~~optical grating~~ cured optical cement by ~~sputter~~ depositing a thin film of material selected from the group consisting of silicon nitride, titanium dioxide, zinc sulfide, or tantalum oxide onto the ~~optical grating~~ cured optical cement to form an optical grating; and

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immobilizing one or more specific binding substances on the optical grating to form a biosensor;

wherein, when the biosensor is illuminated, a resonant grating effect is produced on the reflected radiation spectrum, and wherein the depth and the period of the optical grating are less than the wavelength of the resonant grating effect.

52. (New) The method of claim 46, wherein a narrow band of optical wavelengths is reflected from the biosensor when the biosensor is illuminated with a broad band of optical wavelengths.

53. (New) The method of claim 46, wherein the optical grating comprises a repeating pattern having a period of about 0.01 microns to about 1 micron and a depth of about 0.01 microns to about 1 micron.

54. (New) The method of claim 46, wherein the one or more specific binding substances are arranged in an array of distinct locations.

55. (New) The method of claim 46, wherein the one or more specific binding substances are bound to their binding partners.

56. (New) The method of claim 46, wherein the one or more specific binding substances are selected from the group consisting of protein solutions, peptide solutions, DNA solutions, RNA solutions, solutions of combinatorial chemical libraries, nucleic acids, polypeptides, antigens, polyclonal antibodies, monoclonal antibodies, single chain antibodies (scFv), F(ab) fragments, $F(ab')_2$ fragments, Fv fragments, small organic molecules, cells, viruses, bacteria, and biological samples.

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57. (New) The method of claim 56, wherein the biological sample is selected from the group consisting of blood, plasma, serum, gastrointestinal secretions, homogenates of tissues or tumors, synovial fluid, feces, saliva, sputum, cyst fluid, amniotic fluid, cerebrospinal fluid, peritoneal fluid, lung lavage fluid, semen, lymphatic fluid, tears, and prostatitc fluid.

58. (New) The method of claim 46 further comprising attaching the optical grating to a liquid-containing vessel such that the optical grating forms an internal surface of the liquid-containing vessel.

59. (New) The method of claim 58, wherein the liquid-containing vessel a microtiter plate, a test tube, a petri dish or a microfluidic channel.

60. (New) The method of claim 46, wherein the features of the master grating structure comprise a repeating pattern of shapes selected from the group consisting of continuous parallel lines, squares, circles, ellipses, triangles, ovals, trapezoids, sinusoidal waves, rectangles, and hexagons.

61. (New) The method of claim 46, wherein the features of the master grating structure have a period of about 0.01 microns to about 1 micron and a depth of about 0.01 microns to about 1 micron.

62. (New) The method of claim 46 wherein the substrate comprises plastic.

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63. (New) The method of claim 46, wherein the coating having a higher refractive index than the hardened liquid is selected from the group consisting of zinc sulfide, titanium dioxide, tantalum oxide, and silicon nitride.

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